I. FACILITY INFORMATION

ExxonMobil Research and Engineering Co. is located at 1545 US. Route 22 East, Annandale NJ 08801 – 3059 (Hunterdon County) and consists of plant conducting research and development in the physical, engineering and life sciences. The facility is owned by ExxonMobil Research and Engineering Company. and is operated by ExxonMobil Research and Engineering Company.

The facility is classified as a major facility based on its potential to emit 54 tons per year of nitrogen oxides.

This permit allows individual hazardous air pollutants to be emitted at a rate not to exceed: 115.57 pounds per year of acetaldehyde, 17.06 pounds per year of acrolein, 0.30 pounds per year of arsenic, 140.58 pounds per year of benzene, 0.17 pounds per year of beryllium, 0.56 pounds per year of cadmium, 0.03 pounds per year of cobalt, 1400.12 pounds per year of formaldehyde, 12.78 pounds per year of naphthalene, 25.32 pounds per year of polynuclear aromatic hydrocarbons and 14.20 pounds per year of propylene oxide.

II. AREA ATTAINMENT CLASSIFICATION

The Federal Clean Air Act (CAA) sets National Ambient Air Quality Standards (NAAQS) for six common air pollutants. These commonly found air pollutants (also known as "criteria pollutants") are particulate matter, ground-level ozone, carbon monoxide (CO), sulfur dioxide (SO2), nitrogen dioxide (NO2), and lead. The US Environmental Protection Agency (USEPA) also classifies areas as “attainment” or “nonattainment” for each criteria pollutant, based on the magnitude of an area's problem. Nonattainment classifications are used to specify what air pollution reduction measures an area must adopt, and when the area must reach attainment. Currently, the entire State of New Jersey is designated as nonattainment for the 8-hour ozone NAAQS. New Jersey is designated attainment for all other pollutants. For nonattainment classification refer to https://www.epa.gov/green-book/green-book-national-area-and-county-level-multi-pollutant-information.

III. BACKGROUND AND HISTORY

The equipment that emits air contaminants from this facility include: Three dual fuel fired boilers that fire natural gas, and diesel on an emergency basis only, three diesel fired emergency generators and a diesel fired fire pump, a natural gas fired combustion turbine equipped with a dry LO NOx combustor and duct burner, lube tanks and lube blending tanks, fuel tanks and fuel blending tanks, parts cleaners, four engine test-stands that can be configured to fire gasoline or diesel, with or without SCR or catalytic oxidizer control.

Table 1 - Operating Permit Revision History (located at the end of this document) provides a summary of all the changes that have been incorporated into the operating permit through seven-day notice changes, administrative amendments, minor modifications, or significant modifications since the approval of the initial operating permit or the most recent renewal thereof. Please refer to the attached explanation sheet for the structure and configuration of conditions of approval, included in the Facility Specific Requirements section of this permit.

A Facility-Wide Risk Assessment was conducted as part of the review of this permit application and health risk was determined to be negligible consistent with NJDEP Technical Manual 1003.

This Permit Renewal includes the following changes:
i) The batch vapor parts cleaner (E3171) was removed from the permit.
ii) The engine test-stand operating scenarios OS1, OS2, OS3 and OS4 were modified to exclude the firing of natural gas.
iii) The HAP emissions were recalculated to reflect the above change.

The changes made during this permitting action result in allowable annual HAP emissions reductions as follows:

Acrolein reduced from 0.39 to 0.0085 tons per year.

Butadien (1,3-) reduced from 0.05 to zero tons per year.
Formaldehyde reduced from 4.59 to 0.70 tons per year.
Tetrachloroethane (1,1,2,2-) reduced from 0.003 to zero tons per year.
Benzene reduced from 0.12 to 0.07 tons per year.
Ethylene dibromide reduced from 0.0033 to zero tons per year.
Acetaldehyde reduced from 0.63 to 0.058 tons per year.
Naphthalene reduced from 0.0073 to 0.0064 tons per year.

IV. BASIS FOR MONITORING AND RECORDKEEPING REQUIREMENTS

The facility's operating permit includes monitoring, recordkeeping and reporting requirements that are sufficient to demonstrate the facility's continued compliance with the applicable requirements consistent with the following:

1. Provisions to implement the testing and monitoring requirements of N.J.A.C. 7:27-22.18, the recordkeeping and reporting requirements of N.J.A.C. 7:27-22.19, and all emissions monitoring and analysis procedures or compliance assurance methods required under the applicable requirements, including any procedures and methods promulgated pursuant to 40 CFR 64; and

2. Where the applicable requirement does not require direct periodic monitoring of emissions, the Department requires periodic monitoring of surrogate parameters sufficient to yield reliable data from the relevant time period that are representative of the facility's compliance with the permit.

   For boilers in emission unit U1, the facility monitors fuel use as the surrogate for the long-term (TPY) emission limits for VOC, NOx, CO, SO2, TSP, PM-10 and PM-2.5. Surrogate monitoring for the short-term (lb/hr) emission limits are combustion process adjustment for NOx and CO, and fuel oil sulfur content for SO2.

   For the 3 emergency generators in emission units U16, U27 and U28 and the fire pump in U17, the facility monitors the hours of operation as the surrogate for the long-term (TPY) emission limits for VOC, NOx, CO, TSP, PM-10 and PM-2.5, and diesel sulfur content for SO2.

   For the combustion turbine in emission unit U25, the facility monitors the fuel use as the surrogate for the long-term (TPY) emissions limits for VOC, NOx, CO, SO2, TSP, PM-10 and PM-2.5.

   For the vertical fixed roof storage tanks in emission units U40 and U42 the facility monitors the total throughput (MMgal/yr) and the name and vapor pressure of each VOC stored as surrogates for the long-term (TPY) emission limits for VOC and HAPs. The facility maintains the safety data sheets (SDS), Invoice/bills of lading or certificate of analysis for each product receipt.

   For the blending operations conducted in emission units U41, U44 and U45, the facility monitors the total throughput (MMgal/yr) and the name and vapor pressure of each VOC blended as surrogates for the VOC and HAP emissions. The facility maintains the safety data sheets (SDS), Invoice/bills of lading or certificate of analysis for each component blended.

   For manufacturing and materials handling equipment U8 and U9, the facility monitors the total material transferred (TPY) as the surrogate for the long-term (TPY) emission limits for TSP, PM-10, and PM-2.5. Raw materials and total material transferred (lb/hr) are monitored as surrogates for the short-term (lb/hr) emission limits for TSP, PM-10, and PM-2.5. Particulate filters are monitored / maintained in accordance with manufacturer's recommendations.

3. In some cases, direct periodic monitoring of emissions and/or surrogate parameters is not required due to one or more of the following:

- Equipment size and capacity limitations,
- Subject equipment being permitted at the maximum rated capacity,
- There is no specific state or Federal standard that applies to this piece of equipment,
- Not a pollutant of concern for this piece of equipment,
- Agreements with EPA on the frequency of testing and monitoring for combustion sources.

V. APPLICABLE STATE AND FEDERAL RULES

The facility is subject to New Jersey Air Pollution Control Regulations, codified in N.J.A.C. 7:27-1 through 34, as applicable. A complete text of these regulations is available at:
http://www.nj.gov/dep/aqm/rules27.html

The facility is also subject to the Federal regulations listed below.

NSPS Subpart A:	General Provisions
NSPS Subpart Dc:	Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units
NSPS Subpart GG:	Standards of Performance for Stationary Gas Turbine
NSPS Subpart IIII:	Standards of Performance for Stationary Compression Ignition Internal Combustion Engines
MACT Subpart A:	General Provisions
MACT Subpart ZZZZ:	National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

The Greenhouse Gas (GHG) emissions from this facility are 51,600 TPY CO2e and there is no GHG emissions increase. This renewal is not subject to PSD rules at 40 CFR 52.21.

VI. FACILITY'S COMPLIANCE STATUS

The Responsible Official at the facility has certified that the facility currently meets all applicable requirements of the Federal Clean Air Act and the New Jersey Air Pollution Control Act. Based on this certification, the Department's evaluation of the information included in the facility's application, and a review of the facility's compliance status, the Department has concluded that this air pollution control operating permit should be approved.

The facility has submitted a timely and complete application to renew their operating permit and an application shield is in effect.

This operating permit also includes a permit shield, pursuant to the provisions of N.J.A.C. 7:27-22.17. A permit shield provides that compliance with the relevant conditions of the operating permit shall be deemed compliance with the specific applicable requirements that are in effect on the date of issuance of the draft operating permit, and which form the basis for the conditions in the operating permit.

Also, prior to the expiration of the five-year period, the facility will be required to apply for a renewal of this operating permit, at which time the Department will evaluate the facility and issue a public notice with its findings.

VII. EXEMPT ACTIVITIES

The facility's operating permit does not include exempt activities such as office and interior maintenance activities, maintenance shop activities, food preparation facilities, cafeterias and dining rooms, etc. A complete list of exempt activities, as allowed by the Operating Permit rule, can be found at N.J.A.C. 7:27-22.1.

Table 1 - Operating Permit Revision History

Operating Permit Revision History

EXXONMOBIL RESEARCH AND ENGINEERING CO PI 80368

Permit Activity Number	Type of Revision	Description of Revision	Final Action Date
BOP180002	Minor Modification	This modification includes the following: i) Added U44 consisting of 3 isotainers to store VOC with VP <= 0.02 psia at 70 F. ii) Added IS43 consisting of 2 aviation fuel storage tanks. iii) Added 2 non source fugitive sources (FG40 and FG42) as small containers/totes in tank farms. iv) Added 4 parts cleaning machines to U51. v) Replaced EMGEN E2601/355 BHP (U26) with E2802/315 BHP (U28). vi) Increased the fuel blending throughput in U41 from 3,300 to 10,300 gal/yr. vii) Added PM 2.5 emissions to U16, U17, U25, U28 and U50. viii) Recalculated and adjusted HAP emissions in the permit.	1/13/20
BOP190001	Administrative Amendment	Yuk M. Louie is the Responsible Official.	4/29/19
BOP180001	General Operating Permit	2.2 MMBTU/hr. (HHV) Emergency Gen. (200 kW) Diesel fuel, 100 hrs./yr. Emission Unit U28	4/12/18

FACILITY NAME (FACILITY ID NUMBER)
BOP050001

Activity Number assigned by the Department

New Jersey Department of Environmental Protection
Facility Specific Requirements

Emission Unit Number assigned by the Facility

Brief description of emission unit

Emission Unit: **U40 Sewage Sludge Incinerators**
Operating Scenario: **OS Summary** **OR** **OS2 Fluidized Bed Incinerator**

OS Summary lists all rules and requirements that apply to an emission unit. An emission unit may contain one or more pieces of equipment and corresponding operating scenarios.

OSX denotes the operating scenario number and lists the rules and requirements that apply to a scenario. An operating scenario represents various ways (or scenarios) a piece of equipment is permitted to operate.

Item Number

Description of applicable requirement

Monitoring method to ensure compliance

Recordkeeping to show facility's compliance

Actions and submittals required for the facility

Ref.#	Applicable Requirement	Monitoring Requirement	Recordkeeping Requirement	Submittal/Action Requirement
3	The permittee shall conduct an annual performance test for each pollutant in Table 2 of 40CFR62 Subpart LLL between 11 and 13 calendar months after the previous performance test or within 60 days of a process change. [40 CFR 62.16000(a)]	Other: Conduct the performance test using the test methods, averaging methods and minimum sampling volumes or durations as specified in 40CFR62 Subpart LLL and according to the testing, monitoring and calibration requirements specified in 40 CFR 62.16015(a). [40 CFR 62.16000(a)].	Other: (1) Maintain records of the results of initial, annual and any subsequent performance tests conducted to determine compliance with the emission limits and standards and/or to establish operating limits, as applicable. [40 CFR 62.16025(e)].	Submit a report: Annually to the Administrator and to the Department. The permittee shall submit an annual compliance report as specified in 40 CFR 62. [40 CFR 62.16000(d)]

Rule citation for applicable requirement

Rule citation for monitoring requirement

Rule citation for recordkeeping requirement

Rule citation for submittal/ action requirement

Explanation Sheet for Facility Specific Requirements